

Abstract

The Oscillating Cosmos model proposes that all universal phenomena emerge from the dynamic interplay of two fundamental processes: expansion and contraction. Oscillation between these processes generates cosmic evolution, resonance patterns, and cyclical dynamics observable across scales. This framework unifies physics, biology, and philosophy under a single cosmological principle. Visual illustrations accompany the conceptual model to aid comprehension of oscillatory cycles at cosmic, atomic, and systemic levels.

1. Introduction

Motivation: Traditional cosmology often treats expansion and contraction separately.

Goal: Introduce a unified oscillatory framework for universal dynamics.

Scope: Covers cosmic, physical, biological, and cognitive scales.

2. Conceptual Framework

Key Processes:

Expansion €: Growth, dispersion, increase in spatial scale.

Contraction ©: Collapse, concentration, reduction of scale.

Oscillation: E ↔ C feedback creates cycles across all scales.

Figure 1 – Conceptual Oscillation of the Universe

A circular flow representing expansion and contraction cycles.

[Insert circular arrow diagram: top labeled “Expansion,” bottom “Contraction,” with arrows connecting]

3. Mathematical Model (Simplified)

$$\frac{dE}{dt} = f(t), \quad \frac{dC}{dt} = g(t)$$

Figure 2 – Oscillatory Feedback Graph

X-axis: Time

Y-axis: Magnitude of Expansion/Contraction

Graph: Sinusoidal-like curve showing E and C in anti-phase

[Insert line graph: red curve = Expansion, blue curve = Contraction, anti-phase]

4. Cosmological Applications

Figure 3 – Universe Cycle Illustration

Outer ring: Expansion (cosmic inflation)

Inner ring: Contraction (gravitational collapse)

Oscillation arrows connecting the rings

Applications:

1. Universe-scale: Big Bang expansion, possible contraction (Big Crunch or cyclic models)

2. Galactic: Spiral arms, gravitational resonance

3. Energy: Thermodynamic oscillation analogues

4. Physical & Biological Implications

Figure 4 – Multi-scale Oscillation

Nested loops from Cosmic → Galactic → Molecular → Biological

Each loop represents oscillatory cycles at different scales

Examples:

Heartbeats, circadian cycles, population dynamics

Atomic/molecular vibrations as microcosms of universal oscillation

5. Philosophical Perspective

Dynamic Monism: Universe as a single oscillatory process

Existence over Nothingness: Continuous oscillation negates static void

Cyclic Continuity: Creation and destruction unified in one process

6. Discussion

Compares linear cosmology, thermodynamic cycles, and system theory

Strengths: Universality, cross-disciplinary applications, intuitive visualization

Limitations: Empirical quantification remains challenging

7. Conclusion

The Oscillating Cosmos model demonstrates that expansion and contraction form the fundamental duality underlying all phenomena. Visualized oscillations provide an accessible conceptual framework bridging physics, biology, and philosophy, promoting a unified understanding of the universe.

References

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